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ABSTRACT

The purpose of this study was to examine the experiences of two university graduate students while taking an online course over the World Wide Web, in order to identify issues of design, implementation, and motivation from a user's perspective. The online course was a graduate class on the methods and techniques of training and development. Data collection included descriptions of course content, page design and presentation, assignments and tests, communication techniques, schedule of events, and student/student and instructor/student interactions. Experiences were documented through questionnaires, interview data, and students' annotated experiences during the semester. Issues of course design and delivery, student characteristics, online communications, motivation and self-discipline, and technical problems were examined. Results indicate ways designers designing a Web course, instructors teaching a Web-based course, and students taking a course online can employ instructional strategies to insure the greatest probability of success. (AEF)

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Instruction on the Web: The Online Student's Perspective

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The purpose of this study was to examine the experiences of two university graduate students while taking an on-line course over the Web, in order to identify issues of design, implementation, and motivation from a users' perspective. With the rapid growth and increasing accessibility of the Internet, numerous universities are making on-line telecourses available to students (Barnard, 1997; Kearsley, Lynch, & Wizer, 1995; Stahlke & Nyce, 1996). While researchers are beginning to examine the design and implementation aspects of on-line instruction (Berge, 1997; Couples & Luke, 1996; Eggers & McGonigle, 1996; Pisik, 1997; Trentin, 1997), few studies have documented the experience from an online student's perspective.

Data collection included descriptions of course content, page design and presentation, assignments and tests, communication techniques, schedule of events, and student/student and instructor/student interactions. Experiences were documented through the use of questionnaires, interview data, and student's annotated experiences during the course semester. Issues of course design and delivery, communication restraints, logistical uncertainties, motivational needs of learners, and technical problems will be discussed.

Description of the Course

The on-line course was a graduate class on the methods and techniques of training and development. The course was part of a funded university project in eastern North Carolina in which twenty-five existing university courses would be moved to the Web. The course was the first of its kind offered by the Training and Development program of the university using the Internet as the medium of delivery. The course contributed to the program's philosophy to demonstrate alternative delivery modes while providing students with the opportunity to experience such methods as designer/developer and learner.

Structure of the On-Line Course

Course information was provided through Internet connection via the student's computer. The course incorporated regular interactions between the instructor and students and between students. Major course requirements, expectations, schedule, assignments, and other information were organized through designed web links to individual parts of the course. No on-campus student attendance was required. Communications between student and instructor could occur using e-mail, the discussion group, telephone, fax, and surface mail. Students were also welcome to schedule conferences on campus or via the Internet during the semester.

The basic core of the instruction was organized into ten lessons as listed in an on-line course syllabus. Each Internet lesson included common elements of an introductory narrative, assigned readings from required textbooks, supplementary resources, key point/concept explanations and discussion, applications and examples to support key points, self-evaluations, discussion questions, and assignment/evaluation. Each of the ten lessons had its own web page. Most lesson pages consisted of text and diagrams to illustrate the main points. One lesson included presentation slides. Students printed out each lesson in order to read and study the web page lesson notes as a supplement to textbook readings. Each lesson ranged from approximately 13 to 38 printed pages in length. The purpose of the course was to prepare training and development professionals. By the end of the course, students were to recognize that effective training is based on an understanding of how people learn and differences in types of learning in order to make objective decisions as instructional designers and deliverers of training to result in performance improvement.

Course Requirements

Students were given detailed explanations of several main course requirements. Table 1 presents an abbreviated overview of these requirements.

Assignments and other required course work were submitted to the instructor through a student file. The student file was password protected so that only that student and the instructor could access the file. As students completed an assignment, they moved it to the student file and notified the instructor via an e-mail message. The instructor evaluated each assignment within approximately

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three days and placed it back into the student's file with a grade and evaluation comments. Students were responsible for completing the lessons in order and according to specified and assigned due dates.

Table 1.
Course Requirements.

Prepare a synthesis paper and describe relevant applications.
Prepare a background paper/executive summary and lead a class discussion.
Prepare three detailed session and lesson plans.
Demonstrate effective group instruction through a videotaped training session.
Use an assessment/evaluation instrument to gather data and analyze.
Complete a series of concept/principle quizzes.

Communications and Help

In order to allow group work and class discussion of topics and issues throughout the course, learners were instructed to follow a sequential progression through modules according to a common calendar. Discussions were managed with the Internet software tool, *NetForum*. Communication was open to all students enrolled in the course, secured by individual student entrance passwords. Each of the lessons required students to give initial responses to two discussion questions of the students' choice from a given list. Students could answer additional questions and respond to other students' answers.

"Extended class discussion" was facilitated for students to ask additional questions about the lesson or to make comments about their individual learning experiences related to a given topic. Any information placed on *NetForum* could be read by all students and the instructor. If students wished to communicate only with certain individuals in the class, they were directed to use individual e-mail addresses provided by a link from the home page.

In terms of technical help, students were to review hardware requirements and Internet procedures that were developed by the university. Special links were provided for technical assistance needs. Course information and assistance was provided through the instructor's e-mail.

Schedule

Students were presented with a set of "ideal" completion dates for beginning each lesson. Students were allowed to complete assignments and activities earlier if they chose, although initially only three lessons were on-line, with subsequent lessons added each week as the semester progressed. Table 2 contains the basic course schedule.

Students were advised that the tenth of December was the last date for completing and submitting materials. The instructor forewarned that "extensions for completing course requirements beyond the ending date are seldom granted and only for unanticipated circumstances beyond the control of the student."

Table 2.
Course Schedule.

Date	Lesson/Assignment
8/20	1
8/27	2
9/3	3
9/10	4 (Quiz 1)
9/17	(Req. 1 due)
9/24	5
10/1	6
10/8	(Req. 2 due)
10/15	7 (Quiz 2)
10/22	Student-led discussions
10/29	Student-led discussions
11/5	(Req. 3 due)
11/12	8
11/19	9
11/26	(Req. 4 due)
12/3	10 (Req. 5 due) (Quiz 3)

Evaluation

Each requirement was evaluated by the instructor based upon the criteria for individual assignments. Each requirement received a point total and grade; however, only the point total was recorded by the instructor. Grades on each requirement only reflected the relative position of the student in relationship to other students in the class based upon total performance on the particular requirement. Points were accumulated during the semester to determine the students' final point total for all activities. The total at the end of the semester was analyzed based on the percentage of total points possible and the range and frequency of scores of all students.

The listed set of percentage points for each requirement is shown in the table below.

Table 3.
Evaluation.

Description	Percentage
Synthesis Paper	20%
Strategy/Method Paper & Discussion	20%
3 Lesson Plans	30%
Videotaped Training Session	10%
Assessment/Evaluation report	5%
Concept quizzes	15%

In addition to the total percentages, the quality of class participation beyond the completion of the identified requirements could influence the students' final grade by plus (+) or minus (-) 5 percent.

Student Experiences

Subjects

The two students who participated in this study were graduate students working toward doctoral degrees in instructional technology at the same university. Both students were familiar with the use of computers and the Internet. Both students were taking the course from a city approximately 180 miles from the university campus using IBM-compatible computers. The two students both held full-time jobs in the same city, teaching courses involving the uses and applications of technology to preservice teacher education students and providing technical support in computer hardware and software. Both students had to commute between their jobs, homes, and to other classes at the university offering the on-line course.

One student commented near the end of the semester about how a course such as this should be developed specifically for non-traditional students, reflecting upon how this on-line version of the course was or should be different from the version taught in the classroom. This student had a student colleague who was taking the regular in-class version of the same course during the current semester. This traditional student related that even the in-class version of the course required a great deal of effort in order to keep up with the amount of required readings and outside assignments. The on-line student felt that anyone taking a course from a distance would likely be someone in a situation that made it difficult to travel to the university campus to meet in a classroom every week. Many of these students would not be able to attend the university as a full-time student due to a variety of constraints such as family, work, and relocation or commuting costs. This student raised the question as to whether an on-line course such as this should contain the same workload as a course that met face-to-face in a classroom each week, suggesting that the course should build in less workload to compensate for the extra time involved in students' managing their own instructional time and being totally responsible for the pace and synthesis of the presented topics.

On-Line Communications

When asked about the discussion groups that occurred on-line using *NetForum*, both students agreed that discussion among students was beneficial. Both students answered the required minimum two questions and participated in comments about other students' answers. At one point during the semester, a student at another site had a continued debate with one of the subjects concerning a topic. All students could read all other student responses. Positive aspects of this type of discussion was identified by the two subjects as (1) being able to read other students' answers and comments and (2) having time to reflect upon what was being said before reacting or responding. Further, (3) posting of answers and comments provided a record that allowed for more open pacing and review of topics. Students could return to discussion items at any time to review previous discussions and reflect further. Students also were allowed to read other students' research papers as they were entered on-line by the instructor and became part of the content of the course.

The downside of using discussion groups via *NetForum* was that it did not provide real time communication. This took away any "normal" spontaneity that having face-to-face discussions would allow, adding to a feeling of separation in time and a lack of visual contact. One subject remarked that he felt that there was an artificial politeness in the written interactions of students. Students' being overly polite or diplomatic, combined with the delay in communicating via the electronic written word, resulted in a loss of typical class dynamics including immediate emotional responses on various discussion topics. There was no way to react to a comment as one would do if one placed in a regular classroom with other students present and with real time communication.

The students did comment that in general the communication with the instructor was good, predominantly utilizing e-mail communications and telephone calls. The instructor provided an excellent turnaround rate of responses to students' questions and concerns. Of course, even with such a good response time, the logistics of communication did not allow immediate turnaround, which meant that students would have a lag time delay before getting answers or help to their questions. One student commented that he did get to meet the instructor in person on campus about three weeks before the semester ended. This meeting seemed to make the instructor more personable to that student.

Motivation and Self-Discipline

A major problem that seemed to effect all students taking the course was in individual pacing and a continual effort to keep up with the schedule. Initially students remained on-track with the "ideal" completion dates scheduled for requirements. However, as early as late September, both students began to find the multiple tasks required by the course to be daunting. One student said that in order to discipline himself, he would formally sit down at the same scheduled time of the class each week, even though he would not be required to participate on-line at a given time. The other student divided his time between sometimes meeting with the other student at the class time and completing on-line work from home. After the completion of the first paper (requirement 1), both students began to get progressively more behind.

By the end of November, all students in the course appeared to be several weeks behind schedule. One student was very stressed-out by the fact that there were only two weeks left in the semester, yet the students in the class were only "halfway through" the assignments and requirements.

While the instructor was cognizant of the problem and would send students reminders about the remaining requirements and time constraints, the instructor did remain firm to the amount required and the original time line. The two subjects were forced to scramble during these last two weeks to complete all the requirements before the December tenth deadline. This period also involved each student's making a videotape of himself or herself teaching a lesson. These tapes were then sent to the instructor via surface mail. Viewing the videotape was the only opportunity the students had to allow the instructor to gain a visual impression of their presentation skills.

One student thought that the most difficult part of keeping up with the course requirements lied in the fact that all the information for the course was in the form of text and graphics that had to be read and studied individually by each student. In a typical classroom setting, instruction can be varied to include presentations by the instructor, vocal discussions between students, visual cues and stimuli to vary the instructional presentation pace and gain attention to more important aspects of the topics, and the dynamics of real time delivery. The fact that these on-line students had to read lengthy assignments in the textbook, at other websites, and then print and read an thirteen to thirty-eight page set of review and summary notes and submit discussion questions on each lesson required an inordinate amount of time. This was on top of writing research papers and other more "traditional" assignments of a graduate course. The time spent reading and synthesizing these different sources of information vastly out-shadowed the amount of time that would be spent if the instructor was able to present and summarize the information in a regular classroom setting. When the instructional delivery was combined with the other assignments of responding to the questions and other students' responses, writing research papers, making a videotape of one's teaching, writing lesson plans, and taking quizzes, the students felt overloaded and overwhelmed.

One student in particular felt that his learning style was such that he needed more visual and auditory stimuli, rather than just "read, read, read." This student missed the dynamic interaction of being in front of the instructor and with other students. Even the informal discussions that naturally occur outside of class among students was unavailable due to the more "formal" communication of writing over e-mail and in *NetForum* discussions.

The quizzes that the students were required to complete were e-mailed to them. Each student was on an honor-system trust to complete the exam in one hour without using any notes or other resources. When the test was completed, the students would return the quizzes to the instructor as an attachment to e-mail. One student felt that because there was the problem of taking the exam under such a trust, one should not do "too well" on the exam or the instructor might assume that that student had used notes or had taken longer than the allotted time frame to answer the questions (i.e., cheated). Thus students felt that doing well on the exam would become suspect due to the circumstances of the administration of the test. This created unnecessary test performance anxiety.

Technical Problems

Given that this was the first administration of such an on-line course at the university, there was great potential for problems to occur. At least twice while the two subjects were on-line, the university's server went down. This occurred while the students were entering their responses to the *NetForum* discussion questions. Students then lost all the information that they had entered and had to begin again after the server was back up. The effect was multiplied when considering the number of total students on-line and the multiple comments and interactions that were lost as well. Presumably one's initial responses and comments to another's answer would lose intellectual spontaneity and focus if at first lost and then subsequently re-thought.

Conclusions

Results of this study indicate ways designers designing a web course, instructors teaching a web-based course, and students taking a course online can employ instructional strategies to insure the greatest probability of success. The participation in a web-delivered university course was the first experience in taking a course on-line for the two subjects of the study. From their resulting experiences, the following recommendations can be made for designers of web-instruction, consistent with current research in web-design considerations:

1. Provide a detailed schedule timeline, but provide external cues and imposed deadlines to help students stay on-track.
2. Obtain data and evaluate student reactions to the course throughout the semester to gain insight into the amount of load a student must handle at any given time. Instructors should use such data to revise and adjust course load and simultaneous assignments and readings as necessary to maximize student success.
3. Provide adequate technical support for the instructor and students. Any down time during such a course has major implications for the students and instructor and will influence the outcome of the course.
4. Provide a variety of presentation formats. Include a variety of media such as video, graphics, sound, and other cues to gain and maintain student attention and continuing motivation. Provide visual impressions of the instructor and other students if possible.

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